



Indiana State Board of Education

Room 225 State House
Indianapolis, Indiana 46204-2798

MEMORANDUM

TO: State Board of Education

FROM: Jennifer Hicks, Science Curriculum Specialist

DATE: March 30, 2010

SUBJECT: Indiana Academic Standards for Science

At its meeting on March 30, 2010, Indiana's Education Roundtable recommended that the Indiana State Board of Education adopt Indiana's Academic Standards – Science (2010).

The Roundtable resolution and summary materials about the development process, including public and external reviews, are attached.

The standards themselves are lengthy and are provided separately. They are also available online at <http://www.in.gov/edroundtable/2332.htm>

Indiana's Academic Standards for Science 2010: Process for Revision

Through the work of the State Board of Education and the Indiana Education Roundtable, Indiana develops, adopts, and distributes new standards for English/Language Arts, mathematics, science and for social studies (IC20-10.1-16-1; IC20-10.1-17; P.L. 146-1999). Standards developed for fine arts (music, visual arts), health and physical education and world languages are also approved by the State Board.

According to rule IC 20-10.1-17-3, Indiana's Academic Standards must be clear, concise, jargon free and comparable to the best national and international standards. Indiana's Education Roundtable is specifically charged with ensuring that the academic standards meet this expectation. Indiana's current academic standards were approved by the State Board in 2000 and 2001 and were evaluated by several national and state organizations including the Achieve, Inc., Fordham Foundation, American Association for the Advancement of Science, Indiana Reading Association, Indiana Teachers of Writing, and Indiana Council for Economic Education etc. These Standards were judged to be among the best in the nation. In addition, the U.S. Department of Education has recognized Indiana for the quality and rigor of the process we have used to develop the academic standards.

To ensure that Indiana continues to have academic standards that are among the best in the country, the Department is charged with reviewing and updating the standards following a six-year cycle that coincides with the textbook adoption process. The update of English/language arts, mathematics, and science also coincides with the schedule for updating ISTEP+ assessments.

The process involves content experts from public school teachers and administrators, parents, higher education, and members of the business community.

Standards Development Process Work Plan

1. **Initial Draft** – Department staff, working with grade level and discipline-specific committees consisting of classroom teachers and post-secondary content experts, complete an initial review of existing standards to identify concept/knowledge and skill gaps; the alignment from grade-to-grade is analyzed; outdated content/concepts are identified; comparison is made with ISTEP+, national benchmarks (i.e., American Diploma Project's benchmarks), new NAEP alignment studies, college placement tests, and the most recent reviews of our standards from Achieve, Fordham, etc. This work results in a preliminary document, Draft I.
2. **Draft II** -- Department staff, work with a few key members from the committees, to further refine Draft I and ensure that it is consistent with alignment to NAEP benchmarks at grade level and articulated well across grade levels. This work results in Draft II.
3. **External and Public Review** – Draft II is reviewed and benchmarked by national organizations such as Achieve and Fordham Foundation, along with Indiana's post-

secondary educators, and Indiana professional associations. Draft II is reviewed by Indiana educators and other interested community members. The standards are posted online at the Department's homepage for 60 days to provide an opportunity for additional review and feedback by teachers, administrators, parents, students, members of the business community, and other interested parties. Members of the Roundtable and State Board are also asked to comment as well. Comments and recommendations that are received are integrated into a "final" document, Draft III.

4. **Education Roundtable Action** – The resulting Standards, Draft III, are presented to the Roundtable along with reports and recommendations from the review and benchmarking process. Action on the part of the Roundtable consists of a resolution to the State Board of Education recommending adoption of the new/updated standards.
5. **State Board Adoption** – The updated standards, Draft III, are presented to the State Board of Education for adoption. With the adoption of a set of standards, Indiana schools are expected to begin integrating the updated standards into instruction at the beginning of the next school year.

Indiana's Academic Standards Development Process

September-December 2008: A committee of 37 teachers and postsecondary educators met in several day long meetings in subcommittees (K-5, 6-8, Biology, Earth/Space Science, Physics, Chemistry, Env. Sci.) to review the current Academic Standards for Science (2000), the Core Standards for Science and other benchmarking documents (NAEP Science Framework 2009, National Science Education Standards, Benchmarks for Science Literacy, other states standards). The purpose of benchmarking our standards against these other documents is to determine whether we are meeting the standards that have been set by these other groups that are highly regarded in terms of establishing learning goals for K-12 science education. The committees completed a draft (in some cases we had to have more meetings to flesh out additional courses such as Integrated Chemistry and Physics; Anatomy and Physiology teachers met separately to revise their standards).

February-June 2009: The science curriculum specialists worked with a few individuals from these committees to refine the drafts; in particular the Integrated Chem and Physics and middle school draft. Jenny Hicks and Jane Cooney further refined these drafts keeping the following guiding principles in mind. Standards should convey the content that the student should know and in the case of the process skills, be able to do. The standards are not examples of lessons and they are not the curriculum (by themselves) that a teacher should be teaching in his or her classroom. Given that we feel that instruction should focus on core concepts, we asked committees to also refine the Core Standards and develop "indicators" that would further flesh out these core concepts. We worked to make these Core Concepts unifying statements that bring together the core ideas in a discipline and to serve as a guide for developing curriculum. We tried to provide more depth in the standards with less breadth.

June-Sept 2009: Further refinements and formatting of the drafts were completed and contracts were negotiated by the Commission of Higher Education with Achieve and by reviewers recommended by the Fordham Foundation (Lawrence Lerner and Paul Gross-both authors and reviewers on the “State of the State Science Standards-2005). We have followed a similar review process for all of our content areas.

Sept-Nov 2009: The documents were posted for public review from September 16 until November 24 and the external reviewers provided both a content review and alignment with benchmarking documents. Achieve provided us with an alignment of our draft with the NAEP 2009 Science Framework that I mentioned above along with an alignment with the College Board Standards for College Success. After receiving both feedback from the public and from these external reviews we determined where changes needed to be made. Changes were made by Jenny Hicks, Science Curriculum Specialist, with assistance from a few of the original committee members or postsecondary faculty.

January 2010: The final draft of the standards was submitted to Achieve and Fordham reviewers for their final approval.

February 2010: The final draft will be presented to the Education Roundtable. They are asked make a recommendation to the State Board on whether or not to accept the draft in its current form.

March 2010: The State Board will be asked to approve the draft and once they do it will become finalized. These will then become our standards that instructional materials and curriculum will be aligned.

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